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<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>(21) International Application Number: <b>PCT/US96/08013</b></p> <p>(22) International Filing Date: <b>29 May 1996 (29.05.96)</b></p> <p>(30) Priority Data: <b>08/456,110      31 May 1995 (31.05.95)      US</b></p> <p>(71)(72) Applicant and Inventor: <b>SLOO, Marshall, A. [US/US]; 2817 Irving Avenue, S., Minneapolis, MN 55408-1803 (US).</b></p> <p>(74) Agent: <b>LUEBBERING, Thomas, B.; Hovey, Williams, Timmons &amp; Collins, Suite 400, 2405 Grand Boulevard, Kansas City, MO 64108 (US).</b></p> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p>(81) Designated States: <b>AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</b></p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> </td> </tr> </table>			<p>(21) International Application Number: <b>PCT/US96/08013</b></p> <p>(22) International Filing Date: <b>29 May 1996 (29.05.96)</b></p> <p>(30) Priority Data: <b>08/456,110      31 May 1995 (31.05.95)      US</b></p> <p>(71)(72) Applicant and Inventor: <b>SLOO, Marshall, A. [US/US]; 2817 Irving Avenue, S., Minneapolis, MN 55408-1803 (US).</b></p> <p>(74) Agent: <b>LUEBBERING, Thomas, B.; Hovey, Williams, Timmons &amp; Collins, Suite 400, 2405 Grand Boulevard, Kansas City, MO 64108 (US).</b></p>	<p>(81) Designated States: <b>AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</b></p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>
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<p>(54) Title: <b>METHOD AND APPARATUS FOR HANDLING COMMUNICATIONS</b></p> <p>(57) Abstract</p> <p>A method and apparatus for handling a communication using a computer accessed by way of a computer network includes the step (108) of receiving into a communication handling computer (12) a communication from a sender for a recipient, the step (214) of sending the communication to the recipient over the communication network (16), and the step (216) of sending an acknowledgement to the sender that the communication was received by the recipient.</p>				
<pre> graph TD     A((A)) --&gt; 200{200 "REQUEST MESSAGE SELECTED?"}     200 -- N --&gt; B((B))     200 -- Y --&gt; 202[202 PROMPT ENTRY OF REFERENCE NUMERAL]     202 --&gt; 204[204 SEARCH FOR MESSAGE]     204 --&gt; 206{206 DID SENDER REQUEST RETURN RECEIPT?}     206 -- N --&gt; B     206 -- Y --&gt; 208[208 PROMPT ENTRY OF RECIPIENT'S I.D.]     208 --&gt; 210{210 I.D. CORRECT?}     210 -- N --&gt; B     210 -- Y --&gt; 212[212 DISPLAY MESSAGE]     212 --&gt; 214[214 SEND MESSAGE TO RECIPIENT]     214 --&gt; 216[216 SEND ACKNOWLEDGEMENT TO SENDER]     216 --&gt; END([END])   </pre>				

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METHOD AND APPARATUS FOR HANDLING COMMUNICATIONS5     Background of the Invention1.     Field of the Invention

          The present invention relates to a method and apparatus for handling a communication between two or more parties using a computer accessed by way of a communication network. More particularly, the invention relates to a method and apparatus for receiving a communication from a sender for a recipient, storing the communication as a record in a searchable computer, sending notification to the recipient that the communication was received, receiving a request from the recipient to obtain the communication, delivering the communication to the recipient over the communication network, and sending an acknowledgement to the sender that the communication was received by the recipient. The acknowledgement may also include a data or transaction record including the time and date the communication was stored and the time and date the communication was received by the recipient.

2.     Description of the Prior Art

          Senders of communications often desire to receive notification that their communications were actually received by the recipient. Further, senders of communications often wish to establish the date and time that the communication was sent and received. For example, communications such as cancellation notices and legal notices require that the recipient respond thereto within a certain time period. The senders of these communications need to receive notification that the communications were indeed received so that they can

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attempt to redeliver the communications if they were not received.

5           Conventional certified mail provides the sender  
of a communication with an acknowledgement that the  
communication was delivered to or picked up by the  
recipient. However, conventional certified mail does not  
establish a record of the content of the message and  
therefore does not provide sufficient proof that the  
message content was received by the recipient.  
10   Additionally, certified mail is slow because the  
communication must pass through the conventional mail  
system and then be either hand-delivered directly to the  
recipient or stored at a post office until the recipient  
picks up the communication. Often, several delivery  
15   attempts must be made before the certified letter is  
either delivered or returned to the sender. Certified  
mail is also relatively expensive due to the labor costs  
associated with shipping, storing, delivering and  
redelivering of the communications.

20           Electronic mail has solved the speed problems  
associated with conventional mail because it allows  
communications to be digitized and transmitted  
electronically from one computer to another over a  
communication network such as a local area network (LAN),  
25   wide area network (WAN), or the Internet. However,  
electronic mail does not provide the sender of a  
communication an acknowledgement that a certain  
communication was actually received by the recipient.  
Thus, the sender of a communication does not know for  
30   certain whether his or her communication was received and  
the time and date the communication was received.

          Accordingly, there is a need for an improved  
method and apparatus for providing the sender of a  
communication an acknowledgement that the communication  
35   was received by the recipient. More particularly, there

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is a need for a method and apparatus for providing the sender of a communication an acknowledgement that is faster and less expensive than conventional certified mail services. Additionally, there is a need for a method and apparatus that provides a data record or transaction record of the actual content of the message and the time and date that it was sent and received that can be later retrieved to prove that the communication was received.

#### 10 Objects and Summary of the Invention

The present invention overcomes the problems outlined above and provides a distinct advance in the state of the art. More particularly, the present invention provides an improved method and apparatus for providing the sender of a communication an acknowledgement that the communication was received by the recipient and that the communication was sent and received on a certain date at a certain time. Additionally, the present invention provides a communication handling method that is faster and less expensive than conventional certified mail services.

The preferred communication handling method is implemented on a communication handling apparatus including a central communication handling computer, a plurality of access terminals, and a communication network coupling the communication handling computer with the access terminals. The communications handling computer is preferably a file server type microcomputer including conventional memory for receiving and storing communications.

The access terminals are preferably IBM compatible microcomputers including means for allowing users to transmit communications and requests to obtain communications to the central communications handling computer and obtain previously stored communications.

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Communications and requests to obtain communications can also be sent to the central communications handling computer by way of digitized facsimile transmissions, voice transmissions, or combined video and audio transmissions.

The communication network couples the communications handling computer with the access terminals for providing communication therebetween. The communication network is preferably a telecommunication network.

The method of the present invention is preferably implemented in the form of a computer program for operating the communications handling computer of the communication handling apparatus. The method broadly includes the steps of receiving into the communications handling computer a communication from a sender for a recipient sent over the communication network, sending the communication to the recipient over the communication network, and sending an acknowledgement to the sender that the communication was received by the recipient and that the communication was sent and received on a certain date and time.

In preferred forms, the invention further includes the steps of notifying the recipient of the receipt of the communication in the communication handling computer and receiving into the computer a request from the recipient to obtain the communication.

The communication may be stored in the central computer with "public key" coded identification information for identifying the recipient. To retrieve the communication, the recipient must enter his or her corresponding "private key" coded identification information. In this way, the communication can be encrypted so that only the proper recipient can retrieve the communication.

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The above described method and apparatus for handling communications offers numerous advantages. For example, by providing a method for sending a communication to a recipient and sending a corresponding acknowledgement to the sender that the communication was received by the recipient, senders can be notified that their communications were actually received. This is particularly useful for communications that require a response within a specified time because the sender won't have to repeatedly resend the communication until a response is received.

Additionally, by providing a method for handling communications that creates a retrievable data or transaction record including the content of the communication and the date and time the communication was sent and received, a record is established that can be used to prove that a recipient actually received a message.

Moreover, by providing a communication sending method that is faster than conventional certified mail services, users are able to send certified communications that require immediate response since both the communication and return acknowledgement can be sent in minutes rather than the several days required for conventional mail. Moreover, by providing a communication sending method that is less expensive than conventional certified mail services, users are able to send certified communications more frequently and thus take advantage of the receipt acknowledgement feature.

#### Brief Description of the Drawing Figures

A preferred embodiment of the present invention is described in detail below with reference to the attached drawing figures, wherein:

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Figure 1 is a schematic representation of a communication handling apparatus constructed in accordance with the preferred embodiment of the present invention;

5 Fig. 2A is a flow chart illustrating the preferred method for operating the apparatus of the present invention, and particularly illustrating the communication registration portion of the method;

10 Fig. 2B is a continuation of Fig. 2A illustrating the communication request portion of the method; and

Fig. 2C is a continuation of Fig. 2B illustrating the transaction record retrieval portion of the method.

15 Detailed Description of the Preferred Embodiments

Turning to the drawings, Fig. 1 illustrates preferred communication handling apparatus 10 for implementing the communication handling method of the present invention. Communication handling apparatus 10 broadly includes communication handling computer 12, a plurality of access terminals 14, and communication network 16 for coupling communication handling computer 12 with access terminals 14. Those skilled in the art will appreciate that communication handling computer 12, access terminals 14 and communication network 16 as described and illustrated herein are merely illustrative of the preferred embodiment of the invention and that the communication handling method of the present invention is applicable to virtually all types of computer hardware.

30 In more detail, communication handling computer 12 is preferably a file-server microcomputer, minicomputer, or mainframe computer such as those manufactured by Digital Equipment Corporation. Communication handling computer 12 includes conventional memory, input and output ports, and a modem, and is

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operable for receiving, storing, retrieving and sending communications and requests to obtain communications.

Access terminals 14 are preferably personal computers such as IBM compatible microcomputers containing Intel 486 or Pentium type microprocessors and conventional memory, input and output ports, a modem, and conventional software for communicating with communication handling computer 12. Access terminal 14 may also include "dumb" terminals with communication capabilities only. Those skilled in the art will appreciate that any number of access terminals 14 may be coupled with communication handling apparatus 10.

Access terminals 14 are provided for the entry of communications and requests to obtain communications and are operable for delivering the communications and requests to communication handling computer 12. Access terminals 14 are also operable for receiving transmissions from communication handling computer 12.

Communication network 16 couples communication handling computer 12 with access terminals 14 for data communication therebetween. Network 14 is preferably a conventional telecommunication network including a plurality of switches connected to respective local exchange carriers. Communication network 14 may also include a local area network, wide area network, wireless network, voice network, or any other type of network operable for coupling access terminals 14 with communication handling apparatus 10.

The communication handling method of the present invention is implemented in the form of a computer program for operating communication handling computer 12. The computer program is preferably stored in the read-only-memory (ROM) of communication handling computer 12, but may also be stored in the computer's hard drive memory or

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on conventional external disks for transfer to the hard drive memory of communication handling computer 12.

5       The computer program is preferably written in a standard generalized mark-up language (SGML) such as Hypertext. The mark-up language cooperates with a standard server language such as Common Gateway Interface (CGI) or Practical Extraction and Report Language (PERL) for handling the various operating functions of the communication handling computer 12. Those skilled in the art will appreciate that the computer program can be written in other computer languages as a matter of design choice.

10       The method of the present invention handles all types of communications and data transfers. As used herein, the term communication is understood to include all messages, including but not limited to, personal and business letters, notifications, bills, advertisements, photos, voice messages, and any other communications that can be sent over a communication network. The steps of the method illustrated herein are merely illustrative of the preferred embodiment of the invention and can be modified or adapted.

15       Referring to the flow chart of Fig. 2A, the preferred computer program enters at step 100 where a user operating one of the access terminals 14 accesses communication handling apparatus 10 by way of communication network 14. Access may include conventional log-on or connection for data transfer procedures.

20       In step 102, the program displays and transmits to access terminal 14 an initial communication describing the function and capabilities of the computer program. The program then moves to step 104 where it displays the options "Register Communication?" and "Request Delivery of Communication?" and prompts the user to select one of the options to continue.

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Step 106 determines whether the option "Register Communication" was selected. If the answer to step 106 is yes, the program proceeds to steps 108-122 for prompting the user to register his or her communication. If the answer to step 106 is no, the program proceeds to step 200, of Fig. 2B as described below.

Step 108 prompts the user to enter a communication. The program may limit the length of the communication or may allow a communication of unlimited length as a matter of design choice. Step 110 then asks whether the user wishes to receive an acknowledgement that the communication was requested by or delivered to the recipient. This option allows the sender of a communication to send either conventional communications or return receipt communications. If the answer to step 110 is no, the program proceeds to step 120 as described in more detail below.

If the answer to step 110 is yes, the program proceeds to step 112 which prompts the sender of the communication to enter his or her contact address such as an e-mail address. The contact address is used to send an acknowledgement to the sender that the communication was delivered to the recipient as described below.

The program then proceeds to step 114 which prompts the sender of the communication to enter coded identification information for identifying the recipient. The coded identification information is used for authenticating the recipient so that only the recipient can receive the communication from the communication handling computer 12.

In preferred forms, the identification information is a "public key" provided with a public key encryption technique such as the cryptography methods provided by RSA Data Security, Inc., but may also include any form of protected access or authentication protocol.

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Public key encryption uses a pair of asymmetric keys for encrypting and decrypting coded communications. A pair of keys are provided for each person or entity that wishes to send and receive coded communications. One of the keys is a public key which is published, placed on an on-line database or otherwise made available to the public. The private key is disclosed only to the particular individual and is not distributed. When a communication is encrypted using the public key, it can only be decrypted using the private key. Conversely, when a communication is encrypted using the private key, it can only be decrypted using the public key.

The program next proceeds to step 116 which prompts the sender of the communication to enter the recipient's contact address for delivering the communication to the recipient. The program may also include step 118 for collecting a fee for the registration of a communication. The fee can be collected by various methods including on-line collection methods or by debiting the sender's credit card account while registering the communication.

Step 120 then stores the communication in the memory of communication handling computer 12. The communication and all information related to the processing of the communication such as the time and date the communication was received and sent to the recipient are preferably stored in a database on the hard drive memory of the communication handling computer 12. The communications can also be stored in other conventional memory of communication handling computer 12 such as optical storage devices or tape back-ups for archiving. Step 120 also assigns an alphanumeric reference code to the stored communication for facilitating its later retrieval.

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After the communication has been registered and stored, step 122 notifies the recipient of the communication that a communication has been registered in his or her name. The recipient may be notified by e-mail, facsimile, voice communication, or by conventional postal service mail. The recipient of the communication is also given the reference code assigned in step 120 and instructions on how to contact communication handling computer 12 for retrieval of the communication. If the recipient of the communication does not respond to this notification within a pre-determined amount of time, the computer program may repeat step 122.

If the "Register Communication" option was not selected in step 106 of Fig. 2A, the program continues at step 200 of Fig. 2B, which illustrates the communication request portion of the program. Step 200 first asks whether the "Request Communication" option was selected. If the answer to step 200 is no, the program proceeds to step 300 of Fig. 2C.

If the answer to step 200 is yes, the program proceeds to step 202 which prompts the recipient of the communication to enter the reference code associated with the communication. Step 204 then searches the records of the communication handling computer 12 for the corresponding communication.

Step 206 determines whether the sender of the communication requested a return receipt in step 110 of Fig. 2A. If the answer is no, the program proceeds to step 212, which is discussed in more detail below. If the answer to step 206 is yes, the program proceeds to step 208 which prompts the recipient of the communication to enter his or her identification information. As discussed above, the recipient's identification information is preferably a private key provided with a public key encryption method.

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Step 210 then compares the identification information entered by the recipient to the recipient's actual identification information to determine if it is correct. If the identification information is entered incorrectly, the program returns to step 208 to reprompt the recipient to enter the identification information. The program can limit this loop to a pre-determined number of attempts before disconnecting the user from the program.

If the identification information was entered correctly in step 210, the program proceeds to steps 212 and 214 for displaying the communication or otherwise delivering the communication to the recipient. The communication can be delivered by allowing the recipient to view the message on-line or via a program residing in the recipients access terminal that acts as an agent for the communication handling computer.

The program then proceeds to step 216 which sends an acknowledgement to the sender that the communication was received by the recipient. The acknowledgement may also be sent by e-mail, facsimile, voice or conventional postal service mail.

If the "Request Message" option was not selected in step 200 of Fig. 2B, the program continues at step 300 of Fig. 2C which illustrates the transaction record retrieval portion of the program. Step 300 first asks whether the "Retrieve Transaction Record" option was selected. If the answer to step 300 is no, the program returns to step 104 of Fig. 2A which lists the program options.

If the answer to step 300 is yes, the program proceeds to step 302 which prompts the user to enter the reference information associated with the desired communication and searches the memory of the communication handling computer 12 for the corresponding communication.

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This portion of the program may also include step 304 for collecting a fee for the retrieval of a transaction record.

Step 306 then prompts the user to enter his or her address information such as an e-mail address for sending the transaction record. Finally, step 308 sends the transaction record to the address entered in step 306.

Although the invention has been described with reference to the preferred embodiment illustrated in the attached drawing figures, it is noted that equivalents may be employed and substitutions made herein without departing from the scope of the invention as recited in the claims. For example, although many of the steps of the present method have been described in terms of on-line transactions, some of the steps may actually occur off-line via e-mail, voice, or other data transmission processing means. Additionally, the method may also include a program residing on the access terminals that serves as an agent for the central computer and provides some of the steps in the method before the access terminal is connected to the central computer. Moreover, the preferred communication handling apparatus 10 described and illustrated here may include other types of hardware.

Having thus described the preferred embodiment of the invention, what is claimed as new and desired to be protected by Letters Patent includes the following:

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Claims:

1. A method for handling communications comprising the steps of:

- 5 (a) receiving into a communication handling computer means a communication from a sender for a recipient sent over a communication network, said communication handling computer means including memory means for storing the communication and retrieving means for  
10 retrieving and sending the communication;
- (b) sending the communication to the recipient over said communication network; and
- 15 (c) in response to step (b), sending an acknowledgement to the sender over said communication network that the communication was received by the recipient.

2. The method as set forth in claim 1, including the step of storing a transaction record in the  
20 communication handling computer means, the transaction record including the content of the communication, the time and date the communication was received in said communication handling computer means, and the time and date the communication was sent to the recipient.

25 3. The method as set forth in claim 2, including the steps of receiving into said communication handling computer means a request to retrieve the transaction record and sending a copy of the transaction  
30 record to the requester.



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4. The method as set forth in claim 1, including the step of receiving into said communication handling computer means a request to obtain the communication, said request being sent over said communication network from the recipient.

5. The method as set forth in claim 4, including the step of notifying the recipient of the receipt of the communication in said communication handling computer.

6. The method as set forth in claim 5, including the step of receiving into said communication handling computer means location information from the sender for locating the recipient.

7. The method as set forth in claim 6, including the step of receiving into said communication handling computer means identifying information from the sender for identifying the recipient.

8. The method as set forth in claim 7, including the step of receiving into said communication handling computer means private recipient information from the recipient relating to said identifying information.

9. The method as set forth in claim 8, including the step of comparing said identifying information with said private recipient information for verifying the identity of the recipient.

10. The method as recited in claim 1, said communication handling computer means including a microcomputer.

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11. The method as recited in claim 1, said communication handling computer means including a minicomputer.

5           12. The method as recited in claim 1, said communication handling computer means including a mainframe computer.

10           13. The method as recited in claim 10, including the step of receiving the communication from an access terminal coupled with said communication handling computer by way of said communication network.

15           14. The method as recited in claim 10, said access terminal including a microcomputer.

20           15. The method as recited in claim 1, said communication network including a telecommunication network.

          16. The method as recited in claim 1, said communication network including a local area network.

25           17. The method as recited in claim 1, said communication network including a wide area network.

30           18. The method as recited in claim 1, including the step of charging the sender a fee for receiving the communication into said communication handling computer means.

          19. The method as recited in claim 18, said fee charging step including debiting a charge card account.

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20. The method as recited in claim 18, said fee charging step including collecting an on-line fee.

21. A method for handling communications comprising the steps of:

- 5 (a) receiving into a communication handling computer means a communication from a sender for a recipient sent over a communication network, said communication handling computer means including memory means for storing the communication and retrieving means for retrieving and sending the communication;
- 10 (b) receiving into said communication handling computer means a request sent over said communication network from the recipient to obtain the communication;
- 15 (c) in response to step (b), sending the communication to the recipient over said communication network; and
- 20 (d) in response to one of steps (b) and (c), sending an acknowledgement over said communication network to the sender that the communication was sent to the recipient.

25 22. The method as set forth in claim 21, including the step of notifying the recipient of the receipt of the communication in said communication handling computer.

30 23. The method as set forth in claim 21, including the step of receiving into said communication handling computer means location information from the sender for locating the recipient.

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24. The method as set forth in claim 23, including the step of receiving into said communication handling computer means identifying information from the sender for identifying the recipient.

25. The method as set forth in claim 24, including the step of receiving into said communication handling computer means private recipient information from the recipient relating to said identifying information.

26. The method as set forth in claim 25, including the step of comparing said identifying information with said private recipient information for verifying the identity of the recipient.

27. The method as recited in claim 21, said communication handling computer means including a microcomputer.

28. The method as recited in claim 21, said communication handling computer means including a minicomputer.

29. The method as recited in claim 21, said communication handling computer means including a mainframe computer.

30. The method as recited in claim 21, including the step of receiving the communication from an access terminal coupled with said communication handling computer means by way of said communication network.

31. The method as recited in claim 30, said access terminal including a microcomputer.

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32. The method as recited in claim 21, said communication network including a telecommunication network.

5 33. The method as recited in claim 21, said communication network including a local area network.

34. The method as recited in claim 21, said communication network including a wide area network.

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35. The method as recited in claim 21, including the step of charging the sender a fee for receiving the communication into said communication handling computer means.

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36. The method as recited in claim 35, said fee charging step including debiting a charge card account.

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37. The method as recited in claim 35, said fee charging step including collecting an on-line fee.

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38. A communication handling apparatus for handling a communication comprising:

5 communication handling computer means including receiving means for receiving a communication from a sender for a recipient over a communication network and memory means for storing the communication; and  
access means for allowing a sender of a communication  
10 to access said communication handling computer means for entering a communication,  
said communication handling computer including sending means for sending the communication to the recipient and acknowledgement means for sending an acknowledgement to the sender that  
15 the communication was sent to the recipient.

39. The communication handling apparatus as set forth in claim 38 including an access terminal coupled with said communication handling computer by said  
20 communication network for sending the communication to said communication handling computer.

40. The apparatus as set forth in claim 38, said communication handling computer means including a  
25 microcomputer.

41. The apparatus as set forth in claim 38, said communication handling computer means including a  
30 minicomputer.

42. The apparatus as set forth in claim 38, said communication handling computer means including a mainframe computer.

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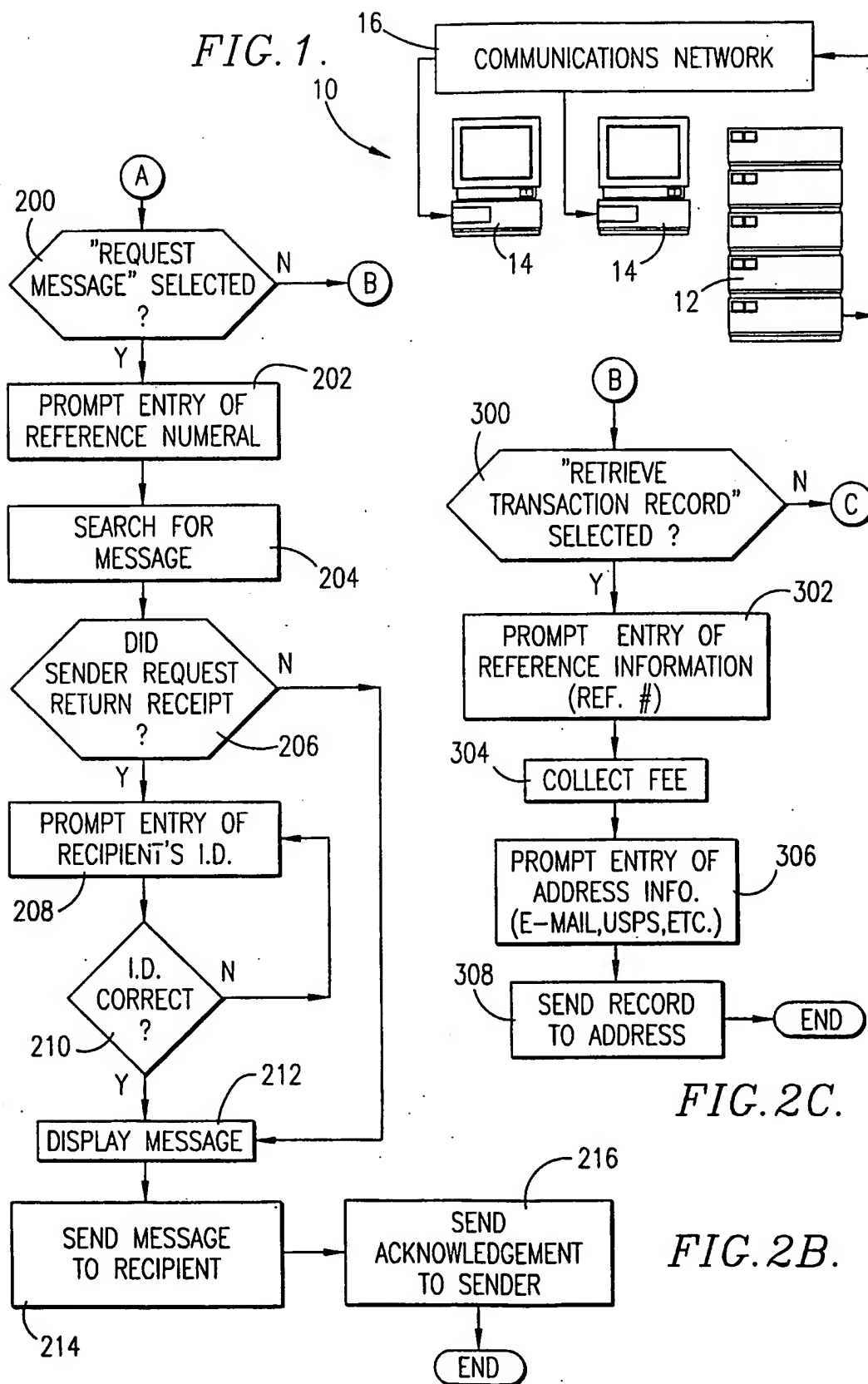
43. The apparatus as set forth in claim 39,  
said access terminal including a microcomputer.

5 44. The apparatus as set forth in claim 38,  
said communication network including a telecommunication  
network.

10 45. The apparatus as set forth in claim 38,  
said communication network including a local area network.

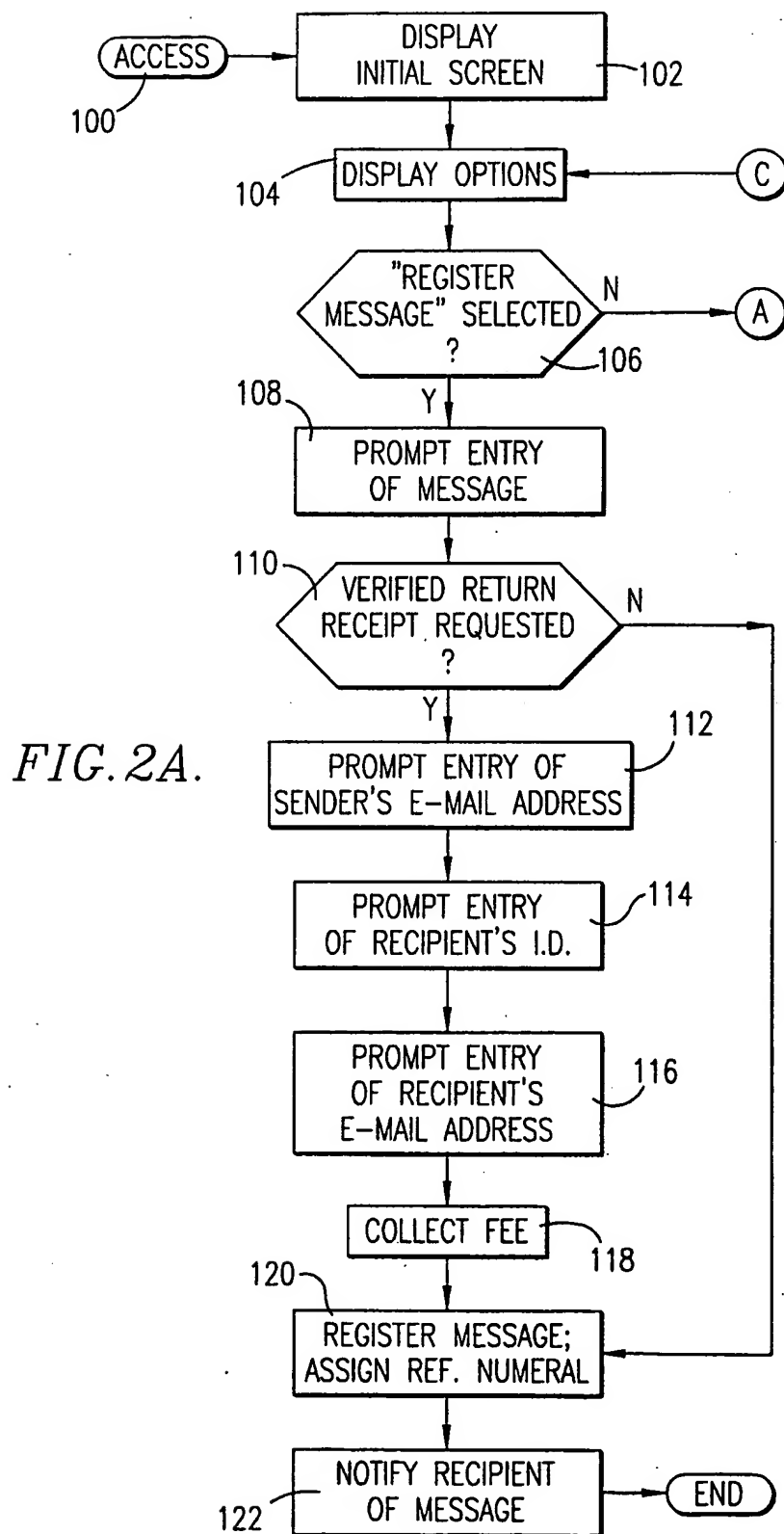
46. The apparatus as set forth in claim 38,  
said communication network including a wide area network.

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## INTERNATIONAL SEARCH REPORT

 International application No.  
 PCT/US96/08013
**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :H04Q 1/00

US CL :340/825.07

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 340/825.07 395/200.04, 200.08, 200.12; 358/402,407; 364/419; 379/67,88,89,112,114,114; 380/3, 4, 30, 25, 45

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---- Y	US, A 5,293,250 (OKUMURA ET AL.) 08 March 1994, abstract, figure 1, column 1 line 1 - column 3 line 13, column 3 line 48 - column 4 line 2, column 4 line 48 - column 5 line 10, column 5 lines 52 - column 7 line 29.	1, 4-7, 15-16, 21-24, 30, 32-33, 38-39, 44-45 ----- 2-3, 8-14, 17-20, 25-29, 31, 34-37, 40-43, 46
Y	US, A, 4,458,109 (MUELLER-SCHLOER) 03 July 1984, abstract, figure 2, column 1 lines 1- 68, column 3 lines 1- 52, column 4 line 19 - column 7 line 31.	2-3, 8-9, 25-26

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*E* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

22 AUGUST 1996

Date of mailing of the international search report

04 OCT 1996

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US96/08013

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 4,972,461 (BROWN ET AL.) 20 November 1990, abstract, figures 7-10, column 1 line 1 - column 2 line 2, column 2 line 50 - column 4 line 12, column 5 line 4 - column 7 line 12, column 12 lines 36 - column 13 line 44.	2-3,18-20,35-37
Y	US, A, 5,216,603 (FLORES ET AL.) 01 June 1993, abstract, figures 21-22, column 60.	10-14, 17, 27-29, 31, 34, 40-43, 46
A	US, A, 5,040,141 (YAZIMA ET AL.) 13 August 1991 abstract, figure 1, column 2 lines 15-41.	1,21,38

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US96/08013

## B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

APS

search terms: mail, private, public, key, email, e, electronic, microcomputer, minicomputer, mainframe, validate, ack, sender, notify, receiver, recipient, authenticate, transaction, record